

3.7 Noise

TECHNICAL BACKGROUND

Sound is a pressure wave transmitted through the air and is described in terms of loudness or amplitude (measured in decibels [dBA]), frequency of pitch (measured in Hertz [Hz] or cycles per second), and duration (measured in minutes or seconds).

Typical human hearing can detect changes in sound levels of approximately 3 dBA under normal conditions. Changes as low as 1 dBA are discernible under quiet, controlled conditions. The human ear is not equally sensitive to all sound frequencies. Sound waves below 16 Hz are not heard at all but can be felt as vibrations. While people with extremely sensitive hearing can discern sounds with pitches as high as 20,000 Hz, most people cannot hear sound with a frequency above 5,000 Hz or below 200 Hz. A special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel compensates by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise is defined as unwanted or objectionable sound, and usually reflects changes from typical background noise levels and spectra. Airborne sound is described as a rapid fluctuation of air pressure above and below the atmospheric pressure. Magnitude, frequency and duration are the variables used to characterize noise. In general, people can perceive a 3 dB difference in noise levels, and a difference of 6-10 dB is perceived as a doubling of loudness. Distance serves to attenuate noise levels and changes frequencies. With every doubling of distance, there is a corresponding reduction in noise levels of approximately 5 to 6 dB. Noise levels from familiar sources are shown in Table 3.7-1.

Table 3.7-1: Typical Residential/Commercial Noise Sources and Levels

Noise Source	Noise Level (dBA)
Rustle of leaves in breeze	25
Whisper (at 6 feet)	35
Inside average residence	40
Refrigerator (in same room)	40
Average office	55
Normal female speech (at 3 feet)	60
Vacuum cleaner (at 10 feet)	70
Garbage disposal (at 3 feet)	80
Food blender (at 3 feet)	90
Auto horn (at 10 feet)	100

SOURCE: J.J. Van Houten 1974

EXISTING CONDITIONS

Noise Sources

The project vicinity is predominately rural with most of the land being used for grazing livestock and growing different kinds of hay. Ambient noise levels in the vicinity of the proposed action are generally low and typical of rural and open space areas. Natural noise sources include animals, wind, and occasional summer thunderstorms. Typical noise levels in rural, uncongested environments include: 44 dBA on a tomato farm over a 24-hour period and 50 dBA over a 24-hour period along county roads (MHA 2002).

Canby is bordered by the Southern Pacific Railroad to the north and State Route 139 to the west. State Route 299 traverses through Canby, intersecting the proposed discharge pipeline route. The I'SOT Community is located along several County Roads including County Road 83, 203, 161, 82, and 54. An airplane landing strip is located roughly 0.8 miles from the I'SOT area. These roads and facilities contribute to ambient noise levels in the vicinity of the project.

Sensitive Receptors

Sensitive receptors would be mostly concentrated around the proposed building and distribution pipeline. Receptors include occupants of the surrounding mobile homes and group homes, rural medical-dental-behavioral health clinic, dining hall, school, and agriculture and custom haying workers along the discharge pipeline route.

REGULATORY FRAMEWORK

Federal. The US EPA suggests a noise reduction goal of 55 dBA (L_{dn}) in residential areas for the protection of health and welfare. The US Department of Housing and Urban Development maintains a maximum standard for noise in residential areas of 65 dBA (L_{dn}). However, no federal regulations apply to potential impacts on noise in the project area.

State. No state regulations apply to potential noise issues of the proposed project. The California Office of Noise Control (ONC) adopted and published in 1976 Guidelines of the Preparation and Content of Noise Elements of the General Plan, which the Modoc County Noise Element discussed below has been based on. The 1976 ONC Guidelines have been updated and replaced by the Noise Element Guidelines issued in 1998 by the Governor's Office of Planning and Research. Table 3.7-2 shows suggested noise standards per land use designation from the Governor's Office of Planning and Research.

Table 3.7-2: Community Noise Exposure

Land Use Category	Community Noise Exposure					
	L _{dn} or CNEL, dB					
	55	60	65	70	75	80
Residential – Low Density Single Family, Duplex, Mobile Homes						
Residential – Multi Family						
Transient Lodging – Motels, Hotels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						

3: AFFECTED ENVIRONMENT

Land Use Category	Community Noise Exposure					
	L_{dn} or CNEL, dB					
	55	60	65	70	75	80
Office Buildings, Business Commercial and Professional						
Industrial, Manufacturing, Utilities, Agriculture						

Interpretation

Normally Acceptable

Specified land use is satisfactory based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable

New Construction or development should be undertaken only after a detailed analysis is made of the noise reduction requirements and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Normally Unacceptable

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable

New construction or development should generally not be undertaken.

SOURCE: Governor's Office of Planning and Research 1998

Local. The Noise Element of the Modoc County General Plan (Modoc County 1988) identifies a maximum noise level 60 dBA L_{dn} ¹ for residential uses. The Noise compatibility standard on Modoc County is 54 dBA L_{eq} ², based on an L_{dn} of 60 dBA. The following noise-related policies may pertain to the proposed action:

- Areas within Modoc County exposed to existing or projected future exterior noise levels exceeding 60 dB L_{dn} should be designated as noise-impacted areas.
- Noise level criteria applied to land uses other than residential or other noise-sensitive uses should be consistent with recommendations of the [Governor's Office of Planning and Research].

¹ L_{dn} , the day-night average noise level, is based on human reaction to cumulative noise exposure over a 24-hour period. L_{dn} accounts for community receptors' greater sensitivity to unwanted noise intrusion during the night. Noise between 10:00 p.m. and 7:00 a.m. is weighted by 10 dBA to take into account the greater annoyance of nighttime noise.

² L_{eq} , equivalent steady-state sound level, is a single value of sound level for any desired duration that includes all time-varying sound energy occurring during the measurement period.

- All building permits should be reviewed by the Planning Department for consistency with the noise element and other elements.

